

### **REMARKS**

Claims 1-15 and 18 are currently pending in this application; claims 16 and 17 are canceled, and claims 19-42 stand withdrawn from consideration in response to a restriction requirement. Independent claims 1 and 14 have been amended herein to further define the nanoparticles. Support for this amendment can be found, for example, at paragraph [0007] and [0012] of the published application.

### **REJECTION OF CLAIMS UNDER 35 U.S.C. § 102(b)**

Claims 1-15 and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Yu *et al.* (Chinese Patent Application No. 1188779; hereinafter "Yu"). The Office Action alleges that Yu discloses an electrically conducting high molecular composite material with a positive temperature coefficient (PTC) which is prepared from high-molecular crystallizing basic material or the mixture of high molecular crystallizing basic material and another high-molecular material, 5-40% wt% of modified conducting filler and other assistants through proportioning, mixing, granulating/crushing, shaping, cross-linking and heat treatment, wherein said modified conducting filler serves to regulate the interface force between filler and basic material to disperse the filler non-uniformly and selectively.

In response, Applicants respectfully disagree that Yu anticipates independent claims 1 and 14. First, Applicants respectfully point out that a patent claim is anticipated by prior art if a single prior art reference discloses every limitation of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of Cal., 814 F.2d 628, 631 (Fed. Cir.1987). If a single claim limitation is missing from the reference, then the reference does not anticipate the claim. Atlas Powder Co. v. E.I. du Pont de Nemours & Co., 750 F.2d 1569 (Fed.Cir.1984). To be anticipating, a prior art reference must disclose each and every limitation of the claimed invention, must be enabling, and must describe the claimed invention

sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention. In re Paulsen, 30 F.3d 1475, 1478-79, 31 USPQ2d 1671, 1673 (Fed.Cir.1994).

Further to the above, the examiner has the initial burden of establishing a prima facie case of anticipation by pointing out where all of the claim limitations appear in a single reference. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655 (Fed. Cir. 1990) and In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). Here, the examiner has failed to show where all the claim limitations appear in Yu. Specifically, for example, Yu fails to teach a field grading material comprising a polymer matrix having two or more polymer phases; and a field grading effective amount of a semiconducting nanoparticle filler, wherein said filler is heterogeneously distributed in said polymer matrix such that said semiconducting nanoparticle filler is well dispersed in at least part of one of said polymer phases; and wherein said semiconducting nanoparticle filler comprises less than 40% by volume of said field grading material.

In contrast to the teaching of Yu, the polymer matrix of the present invention comprises two or more polymer phases. Moreover, since Yu fails to teach or suggest a field grading material comprising a polymer matrix, wherein said polymer matrix has two or more polymer phases; and a field grading effective amount of a semiconducting nanoparticle filler, wherein said filler is heterogeneously distributed in the polymer matrix, Yu does not anticipate claim 1 of the present invention at least for these two reasons. Further, Applicants respectfully contend that in contrast to the teachings of the presently claimed invention which are directed to a field grading effective amount of semi-conducting fillers, Yu is concerned with conductive fillers. Yet another distinguishing feature of the present invention is the fact that in contrast to the teachings of Yu, the semiconducting nanoparticle filler in the present invention comprises less than 40% by volume of the field grading material. (see paragraph [0019] of the published application).

Yu fails to anticipate claim 14 because, *inter alia*, Yu fails to teach a field grading material comprising a semiconducting nanoparticle filler heterogeneously distributed in a polymeric matrix, wherein a surface of said semiconducting nanoparticle filler is modified by treatment with an organosilane or organotitanate compound and said organosilane compound

comprises an organic group selected from alkyl, alkylamino, amino and carboxy, as presently claimed in amended independent claim 14. Applicants respectfully point out that the examiner has the initial burden of establishing a prima facie case of anticipation by pointing out where all of the claim limitations appear in a single reference. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655 (Fed. Cir. 1990).

With respect to rejected claims 2-14, which depend on claim 1, and claim 15, which depends on independent claim 14, it is respectfully pointed out that typically if an accused infringer does not infringe an independent claim, it cannot infringe any claim that depends from the independent claim. Wahpeton Canvas Co. v. Frontier, Inc., 870 F.2d 1546 (Fed. Cir. 1989). Applicants respectfully note that rejection of claim 17 is moot since the claim is canceled.

Thus, in view of the above, Applicants respectfully request that rejection of claims 1-15 under 35 U.S.C. § 102(b) as being anticipated by Yu be withdrawn.

#### **REJECTION OF CLAIMS UNDER 35 U.S.C. § 103(a)**

Claim 18 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yu in view of Foulger (U.S. Patent No. 6,417,265; hereinafter “Foulger”). In particular, the Examiner alleges that although Yu is silent on the electric cable, Foulger discloses in claims 1 and 9 and col. 1, line 29 and col. 3, line 38 a conducting polymer composite comprising polymeric material and a conducting filler such as carbon nanotube to provide a composition for electric field grading in power cables. As such, it is alleged that it would have been obvious to one of ordinary skill in the art at the time the invention was made to produce a field grading material to be used in cable with the expected success.

#### **FOULGER**

Foulger discloses a conducting polymer composite that is crosslinked comprising a semicrystalline polymer minor phase with conducting filler material dispersed therein in an amount sufficient to generate a continuous conductive network in the minor phase, and which is mixed with major phase polymers, the materials being selected such that the minor phase and

major phases will not engage in electrostatic interactions that promote miscibility. Foulger's minor phase is dispersed in the major phase to generate a continuous conductive network in the composite material. The composite material is crosslinked by physical or chemical means. The crosslinked conducting polymer composite having a reduced amount of conducting filler while supporting a continuous conductive network in the crosslinked polymer composite.

### **YU IN VIEW OF FOULGER**

Yu fails to teach or suggest a field grading material comprising a polymer matrix having two or more polymer phases; and a field grading effective amount of a semiconducting nanoparticle filler, wherein said filler is heterogeneously distributed in said polymer matrix such that said semiconducting nanoparticle filler is well dispersed in at least part of one of said polymer phases; and wherein said semiconducting nanoparticle filler comprises less than 40% by volume of said field grading material.

Moreover, since Yu fails to teach or suggest a field grading material comprising a polymer matrix, wherein said polymer matrix has two or more polymer phases; and a field grading effective amount of a semiconducting nanoparticle filler, wherein said filler is heterogeneously distributed in the polymer matrix. Further, Applicants respectfully contend that in contrast to the teachings of the presently claimed invention, which are directed to a field grading effective amount of semi-conducting fillers, Yu is concerned with conductive fillers. Yet another distinguishing feature of the present invention is the fact that in contrast to the teachings of Yu, the semiconducting nanoparticle filler in the present invention comprises less than 40% by volume of the field grading material. (see paragraph [0019] of the published application).

These deficiencies in Yu are not remedied by Foulger . The Office Action cites Foulger, contending that Yu is silent on the electric cable and Foulger provides this deficiency. Yet, Foulger does not remedy Yu's deficiencies because, *inter alia*, Foulger discloses a cross-linked conducting polymer composite and fails to teach or suggest a cable termination and claim 18 seeks protection for reducing electric field stress at a termination for an electrical cable, also

called cable end. As such, at least for this additional reason, claim 18 is also new and nonobvious over Yu in view of Foulger.

MPEP 2143 recites seven rationales that may support a conclusion of obviousness: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of known technique to improve similar devices (methods or products) in the same way; (4) applying a known technique to a known device (method or product) ready for improvement to yield predictable results; (5) "obvious to try" - choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; (7) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. With this in consideration, Applicants respectfully argue that the combination of Yu and Foulger does not render the instant claims as obvious, as the combination fails to support any of these rationales.

For example, a PHOSITA would not have recognized that the results of the combination were predictable, and indeed there would have been no reasonable expectation of success to arrive at the present invention by combining the teachings of Yu and Foulger because, *inter alia*, Yu has many deficiencies that Foulger fails to address. As an example, Applicants respectfully contend that in contrast to the teachings of the presently claimed invention, which are directed to a field grading effective amount of semi-conducting fillers, Yu is concerned with conductive fillers and Foulger discloses a cross-linked conducting polymer composite. A prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Here, a PHOSITA would not have recognized that the results of combining Yu with Foulger were predictable for the reasons outlined above, and there is no teaching, suggestion, or

motivation in the cited references or in the prior art that would have led one of ordinary skill to modify Yu's teaching or to combine such teaching with Foulger's disclosure of a cross-linked conducting polymer composite to arrive at the instantly claimed invention. Therefore for these additional reasons, the obviousness rejection based upon combining the primary Yu reference with Foulger is improper and should be withdrawn.

Applicants respectfully highlight that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. In re Fritch, 972 F.2d 1260 (Fed. Cir. 1992). Using the inventor's success as evidence that one of ordinary skill in the art would have reasonably expected success represents an impermissible use of hindsight. Life Technologies, Inc. v. Clontech Laboratories, Inc., 224 F.3d 1320 (Fed. Cir. 2000). It is impermissible to engage in a hindsight reconstruction of the claimed invention by using the applicant's structure as a template and selecting elements from references to fill in the gaps. In re Gorman, 933 F.2d 892 (Fed. Cir. 1991).

Accordingly, in view of the above, Applicants respectfully request withdrawal of the rejection under U.S.C. §103(a).

### **CONCLUSION**

There being no other outstanding issues, it is believed that the application is in condition for allowance, and such action is respectfully requested. Should the Examiner believe that anything further is desirable in order to place the application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

The undersigned hereby authorizes the Commissioner to charge any fee insufficiency and credit any overpayment associated with this submission to Deposit Account No. 08-1935.

Respectfully submitted,

/s/ Shahrokh Falati

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